

California High-Speed Train Project



Agreement No.: HSR 13-06
Book 3, Part E, Subpart 3

Record of Survey and Control Monument Data

HSR 13-06 - EXECUTION VERSION

Revision No.	Date	Description
0	01 Mar 12	Initial Release, R0
1	31 Jul 13	EXECUTION VERSION

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SURVEY CONTROL MONUMENTS – SYSTEMWIDE MAP

SURVEY CONTROL MONUMENTS – SYSTEMWIDE DATA TABLES

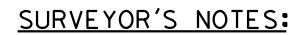
RECORD OF SURVEY – COUNTY OF MADERA ⁽¹⁾

DRAFT RECORD OF SURVEY – COUNTY OF FRESNO ⁽²⁾

CONSTRUCTION PACKAGE 1 - SURVEY CONTROL MONUMENT DATA AND TIE SHEETS ⁽³⁾

- (1) To be added via addendum.
- (2) Final Record to be added via addendum.
- (3) Construction Package 1, Survey Control Monument Data and Tie Sheets within County of Madera to be added via addendum.





- LEGEND

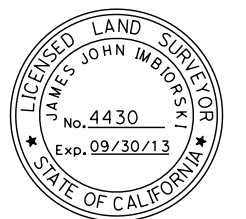
SURVEYOR'S STATEMENT:

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME,
OR UNDER MY DIRECTION, IN CONFORMANCE WITH THE
REQUIREMENTS OF THE PROFESSIONAL LAND SURVEYORS' ACT,
AT THE REQUEST OF THE CALIFORNIA HIGH-SPEED RAIL
AUTHORITY IN SEPTEMBER, 2010.


JAMES JOHN IMBIORSKI L.S. 443

03/01/2012

DATE



CONSTRUCTION PACKAGE 1 - SURVEY CONTROL MONUMENT DATA AND TIE SHEETS

						DESIGNED BY L. GILL
						DRAWN BY V. HUANTE
						CHECKED BY J. ELLIOTT
						IN CHARGE J. IMBIORSKI
REV	DATE	BY	CHK	APP	DESCRIPTION	DATE 03/01/2012

DESIGNED BY	L. GILL
DRAWN BY	V. HUANTE
CHECKED BY	J. ELLIOTT
IN CHARGE	J. IMBIORSKI
DATE	03/01/2012

**PARSONS
BRINCKERHOFF**



CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT SURVEY CONTROL

SURVEY CONTROL MONUMENTS
SYSTEMWIDE MAP

CONTRACT NO.

DRAWING NO.
VS-001

SCALE
AS SHOWN

SHEET NO.

2/24/2012 4:54:58 PM CAHSRP.TBL CHSR_half_black.plt T:\13259B_Calif_High_Speed_Rail\CADD\Standard Drawings\Survey\SD-VS-002.dgn huante

ZONE 3 (0403)													CCS83		CCS83		NAVD88																
STATION		NAD 83		NAD 83		ELLIPSOID		GEOID		CONVERGENCE		SCALE		ELEVATION COMBINATION		ZONE 3		ZONE 3		NAVD88													
		LATITUDE		LONGITUDE		US FEET		US FEET		ANGLE		FACTOR		FACTOR		FACTOR		US FEET		US FEET		US FEET		DESCRIPTION									
B004P	37-47-28.03656	122-23-21.23148	-95.988	-106.552	-01-09-23.93	0.99992942	1.00000459	0.99993401	2116037.08	6015794.03	10.56	2-1/2	INCH	BRASS	DISK	STAMPED	"B004P	LS4430	2010"														
B010P	37-43-39.89477	122-23-34.93581	-76.437	-106.781	-01-09-32.32	0.99992926	1.00000365	0.99993292	2092988.73	6014227.52	30.34	2-1/2	INCH	BRASS	DISK	STAMPED	"B010P	LS4430	2010"														
B020P	37-36-02.71150	122-23-02.37438	-100.347	-106.961	-01-09-12.39	0.99993260	1.00000480	0.99993740	2046704.43	6015911.98	6.61	2-1/2	INCH	BRASS	DISK	STAMPED	"B020P	LS4430	2010"														
B030P	37-30-04.74660	122-15-06.96148	-89.983	-106.902	-01-04-21.32	0.99993863	1.00000430	0.99994293	2009762.51	6053484.48	16.92	2-1/2	INCH	BRASS	DISK	STAMPED	"B030P	LS4430	2010"														
B040P	37-24-25.37433	122-06-37.52658	-60.061	-107.073	-00-59-09.43	0.99994710	1.00000287	0.99994997	1974705.88	6093937.24	47.01	2-1/2	INCH	BRASS	DISK	STAMPED	"B040P	LS4430	2010"														
B050P	37-20-59.37810	121-55-58.60959	-41.253	-107.208	-00-52-38.27	0.99995355	1.00000197	0.99995552	1953035.70	6145160.13	65.96	2-1/2	INCH	BRASS	DISK	STAMPED	"B050P	LS4430	2010"														
B060P	37-15-10.42320	121-48-00.02353	88.428	-106.489	-00-47-45.26	0.99996673	0.99999577	0.99996250	1917181.68	6183308.34	194.92	2-1/2	INCH	BRASS	DISK	STAMPED	"B060P	LS4430	2010"														
B070P	37-08-44.88213	121-39-31.50038	256.284	-106.281	-00-42-33.93	0.99998459	0.99998774	0.99997233	1877651.15	6223935.07	362.57	2-1/2	INCH	BRASS	DISK	STAMPED	"B070P	LS4430	2010"														
B080P	37-01-43.93503	121-34-05.18184	102.438	-107.057	-00-39-14.14	1.00000803	0.99999510	1.00000313	1834765.12	6249867.26	209.49	2-1/2	INCH	BRASS	DISK	STAMPED	"B080P	LS4430	2010"														
B090P	36-58-03.91222	121-25-07.55163	58.894	-107.537	-00-33-44.99	1.00002191	0.99999718	1.00001909	1812050.27	6293242.83	166.43	2-1/2	INCH	BRASS	DISK	STAMPED	"B090P	LS4430	2010"														
B100P	37-02-45.22131	121-16-34.09708	468.324	-106.060	-00-28-30.64	1.00000436	0.99997760	0.99998196	1840123.58	6335147.06	574.38	2-1/2	INCH	BRASS	DISK	STAMPED	"B100P	LS4430	2010"														
B110P	37-06-03.51225	121-07-24.35863	448.347	-106.886	-00-22-54.07	0.99999309	0.99997855	0.99997164	1859844.98	6379847.64	555.23	2-1/2	INCH	BRASS	DISK	STAMPED	"B110P	LS4430	2010"														
B120P	37-06-00.34798	120-55-57.53063	-6.617	-108.865	-00-15-53.93	0.99999326	1.00000032	0.99999358	1859211.00	6435486.70	102.25	2-1/2	INCH	BRASS	DISK	STAMPED	"B120P	LS4430	2010"														
B130P	37-05-45.34939	120-45-43.56007	-13.462	-108.872	-00-09-37.68	0.99999408	1.00000064	0.99999473	1857509.43	6485221.77	95.41	2-1/2	INCH	BRASS	DISK	STAMPED	"B130P	LS4430	2010"														
B140P	37-05-42.26397	120-36-09.41450	-2.090	-108.055	-00-03-46.17	0.99999425	1.00000010	0.99999435	1857106.73	6531737.24	105.96	2-1/2	INCH	BRASS	DISK	STAMPED	"B140P	LS4430	2010"														
B150P	37-05-40.27229	120-24-02.30461	61.286	-106.992	00-03-38.99	0.99999436	0.99999707	0.99999143	1856904.27	6590646.84	168.28	2-1/2	INCH	BRASS	DISK	STAMPED	"B150P	LS4430	2010"														
B154P	37-06-07.30586	120-19-44.04282	95.467	-106.748	00-06-17.11	0.99999288	0.99999543	0.99998831	1859668.67	6611565.97	202.21	2-1/2	INCH	BRASS	DISK	STAMPED	"B154P	LS4430	2010"														
C010P	37-13-44.34838	120-22-46.05440	90.443	-105.307	00-04-25.68	0.99997042	0.99999567	0.99996609	1905870.75	6596761.50	195.75	2-1/2	INCH	BRASS	DISK	STAMPED	"C010P	LS4430	2010"														
C020P	37-18-52.08478	120-32-28.16420	55.879	-104.730	-00-01-30.71	0.99995803	0.99999733	0.99995536	1936975.13	6549697.75	160.61	2-1/2	INCH	BRASS	DISK	STAMPED	"C020P	LS4430	2010"														
S162P	37-05-00.66353	120-08-49.94698	172.439	-106.510	00-12-57.57	0.99999656	0.99999175	0.99998831	1853076.85	6664580.14	278.95	2-1/2	INCH	BRASS	DISK	STAMPED	"S162P	LS4430	2010"														
S171P	36-58-01.08145	120-00-30.43866	179.946	-106.496	00-18-03.38	1.00002210	0.99999139	1.00001349	1810823.49	6705278.29	286.44	2-1/2	INCH	BRASS	DISK	STAMPED	"S171P	LS4430	2010"														
S182P	36-50-00.81370	119-55-05.93458	194.502	-106.136	00-21-22.05	1.00005633	0.99999070	1.00004703	1762400.74	6731915.56	300.64	2-1/2	INCH	BRASS	DISK	STAMPED	"S182P	LS4430	2010"														
ZONE 4 (0404)													CCS83		CCS83		NAVD88																
STATION		NAD 83		NAD 83		ELLIPSOID		GEOID		CONVERGENCE		SCALE		ELEVATION COMBINATION		ZONE 4		ZONE 4		NAVD88													
		LATITUDE		LONGITUDE		US FEET		US FEET		ANGLE		FACTOR		FACTOR		FACTOR		US FEET		US FEET		US FEET		DESCRIPTION									
S182P	36-50-00.81370	119-55-05.93458	194.502	-106.136	-00-32-52.28	0.99994731	0.99999070	0.99993801	2187855.88	6292923.69	300.64	2-1/2	INCH	BRASS	DISK	STAMPED	"S182P	LS4430	2010"														
S193P	36-43-12.41590	119-46-54.71065	180.532	-105.506	-00-27-59.22	0.99994211	0.99999136	0.99993347	2146202.84	6332518.62	286.04	2-1/2	INCH	BRASS	DISK	STAMPED	"S193P	LS4430	2010"														
S204P	36-34-35.14633	119-44-30.21848	169.624	-106.303	-00-26-33.02	0.99994113	0.99999189	0.99993302	2093801.33	6343877.62	275.93	2-1/2	INCH	BRASS	DISK	STAMPED	"S204P	LS4430	2010"														
S214P	36-27-22.93081	119-38-09.89001	162.393	-106.068	-00-22-46.12	0.99994511	0.99999223	0.99993735	2049872.14	6374608.10	268.46	2-1/2	INCH	BRASS	DISK	STAMPED	"S214P	LS4430	2010"														
S224P	36-19-40.85606	119-35-23.23985	138.801	-106.959	-00-21-06.70	0.99995420	0.99999336	0.99994756	2003059.67	6387934.43	245.76	2-1/2	INCH	BRASS	DISK	STAMPED	"S224P	LS4430	2010"														
S224P2	36-19-40.57910	119-35-42.90083	136.848	-107.019	-00-21-18.43	0.99995420	0.99999345	0.99994766	2003041.59	6386325.54	243.87	2-1/2	INCH	BRASS	DISK	STAMPED	"S224P2	LS4430	2010"														
S234P	36-10-53.78621	119-35-08.69642	96.279	-109.066	-00-20-58.02	0.99997063	0.99999539	0.99996603	1949754.96	6388799.36	205.35	2-1/2	INCH	BRASS	DISK	STAMPED	"S234P	LS4430	2010"														
S245P	36-02-12.11815	119-30-39.43538	86.139	-110.334	-00-18-17.38	0.99999326	0.99999588	0.99998914	1896877.75	6410592.04	196.47	2-1/2	INCH	BRASS	DISK	STAMPED	"S245P	LS4430	2010"														
S256P	35-53-28.80672	119-24-49.28885	84.857	-110.557	-00-14-48.49	1.00002232	0.99999594	1.00001826	1843821.62	6439121.77	195.41	2-1/2	INCH	BRASS	DISK	STAMPED	"S256P	LS4430	2010"														
S267P	35-44-45.36386	119-23-01.40870	137.326	-110.883	-00-13-44.13	1.00005773	0.99999343	1.00005116	1790853.29	6447787.06	248.21	2-1/2	INCH	BRASS	DISK	STAMPED	"S267P	LS4430	2010"														
ZONE 5 (0405)													CCS83		CCS83		NAVD88																
STATION		NAD 83		NAD 83		ELLIPSOID		GEOID		CONVERGENCE		SCALE		ELEVATION COMBINATION		ZONE 5		ZONE 5		NAVD88													
		LATITUDE		LONGITUDE		US FEET		US FEET		ANGLE		FACTOR		FACTOR		FACTOR		US FEET		US FEET		US FEET		DESCRIPTION									
S256P	35-53-28.80672	119-24-																															

IN THE COUNTY OF FRESNO
RECORD OF SURVEY No. xxxx
PARSONS BRINCKERHOFF 2010 - 2011

SHEET 1 OF 2

SURVEYOR'S NOTES:

1. THE CALIFORNIA SPATIAL REFERENCE NETWORK (CSRN) WAS USED TO DETERMINE MONUMENT POSITIONS SHOWN HEREON.
2. POSITIONS PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) FOR THE CSRN IS THE BASIS FOR ALL MONUMENT POSITIONS.
3. THE DATUM FOR HORIZONTAL POSITIONS IS THE NORTH AMERICAN DATUM OF 1983 (NAD83), NATIONAL SPATIAL REFERENCE SYSTEM OF 2007 (NSRS2007).
4. THE EPOCH DATE FOR ALL POSITIONS IS 2007.00.
5. THE HORIZONTAL PLANE COORDINATES SHOWN FOR EACH MONUMENT IS BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83).
6. THE METHOD OF SURVEY FOR EACH MONUMENT WAS MULTIPLE OCCUPATIONS USING DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS) TIES TO THE CSRN.
7. UNITS FOR POSITIONS SHOWN HEREON ARE "U.S. SURVEY FOOT" (ONE FOOT = 1200/3937 METERS).
8. FOR MONUMENTS LOCATED ADJACENT TO A CCS83 STATE PLANE ZONE BOUNDARY LINE, HORIZONTAL PLANE COORDINATES ARE SHOWN FOR EACH ZONE.
9. THE PREFIX LETTER FOR EACH MONUMENT NAME INDICATES THE SUBDIVISION NAME OF THE CHSTP: D-DESERT; S-SIERRA.
10. THE CONTROL CONSISTS OF PRIMARY STATIONS ESTABLISHED AT APPROXIMATE 10-MILE INTERVALS AND SECONDARY STATIONS ESTABLISHED AT APPROXIMATE 2-MILE INTERVALS.
11. PRIMARY SURVEY CONTROL MONUMENT DESIGNATIONS HAVE THE SUFFIX LETTER "P", INDICATING A MINIMUM OF TWO SEPARATE 1-HOUR OR LONGER STATIC GPS FIELD SURVEY OCCUPATIONS.
12. ALL OTHER SECONDARY SURVEY CONTROL STATIONS UTILITIZED REDUNDANT 30 MINUTE OR LONGER STATIC GPS FIELD SURVEY OCCUPATIONS.
13. EQUIPMENT USED FOR DGPS SURVEYS WAS TRIMBLE 5700 RECEIVERS, MATCHING ZEPHYR GEODETIC ANTENNAS AND FIXED HEIGHT RODS.
14. EACH MONUMENT SHOWN HEREON HAS AN INDIVIDUAL RECORD TITLED "SURVEY CONTROL MONUMENT DATA SHEET", ON FILE IN THE OFFICE OF THE CALIFORNIA HIGH-SPEED RAIL AUTHORITY.
15. EACH MONUMENT SHOWN HEREON HAS AN INDIVIDUAL RECORD TITLED "SURVEY CONTROL MONUMENT TIE SHEET", ON FILE IN THE OFFICE OF THE CALIFORNIA HIGH-SPEED RAIL AUTHORITY.
16. SEE SHEET 2 OF 2 FOR POSITIONAL DATA.

PURPOSE STATEMENT:

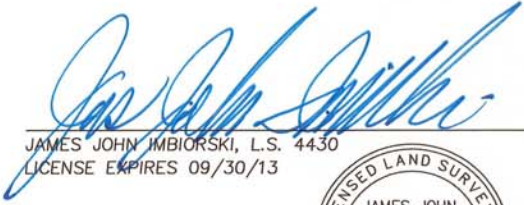
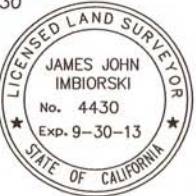
THIS PURPOSE OF THIS SURVEY WAS TO ESTABLISH HORIZONTAL GEODETIC CONTROL TO SUPPORT THE CALIFORNIA HIGH-SPEED TRAIN PROJECT (CHSTP).

BASIS OF BEARINGS STATEMENT:

THIS BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 5 NAD83 (NSRS2007), EPOCH 2007.00 AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING SYSTEMS (CGPS) STATIONS 'GR8R' AND 'P572' BEARING NORTH 81°25'33.14" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER.

SURVEYOR'S STATEMENT:

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE PROFESSIONAL LAND SURVEYORS' ACT AT THE REQUEST OF THE CALIFORNIA HIGH-SPEED RAIL AUTHORITY BETWEEN SEPTEMBER OF 2010 AND DECEMBER OF 2011.


JAMES JOHN IMBIORSKI, L.S. 4430
LICENSE EXPIRES 09/30/13
DATE 2/20/12


COUNTY SURVEYOR'S STATEMENT:

THIS MAP HAS BEEN EXAMINED IN ACCORDANCE WITH SECTION 8766 OF THE PROFESSIONAL LAND SURVEYORS' ACT THIS _____ DAY OF _____, 2012.

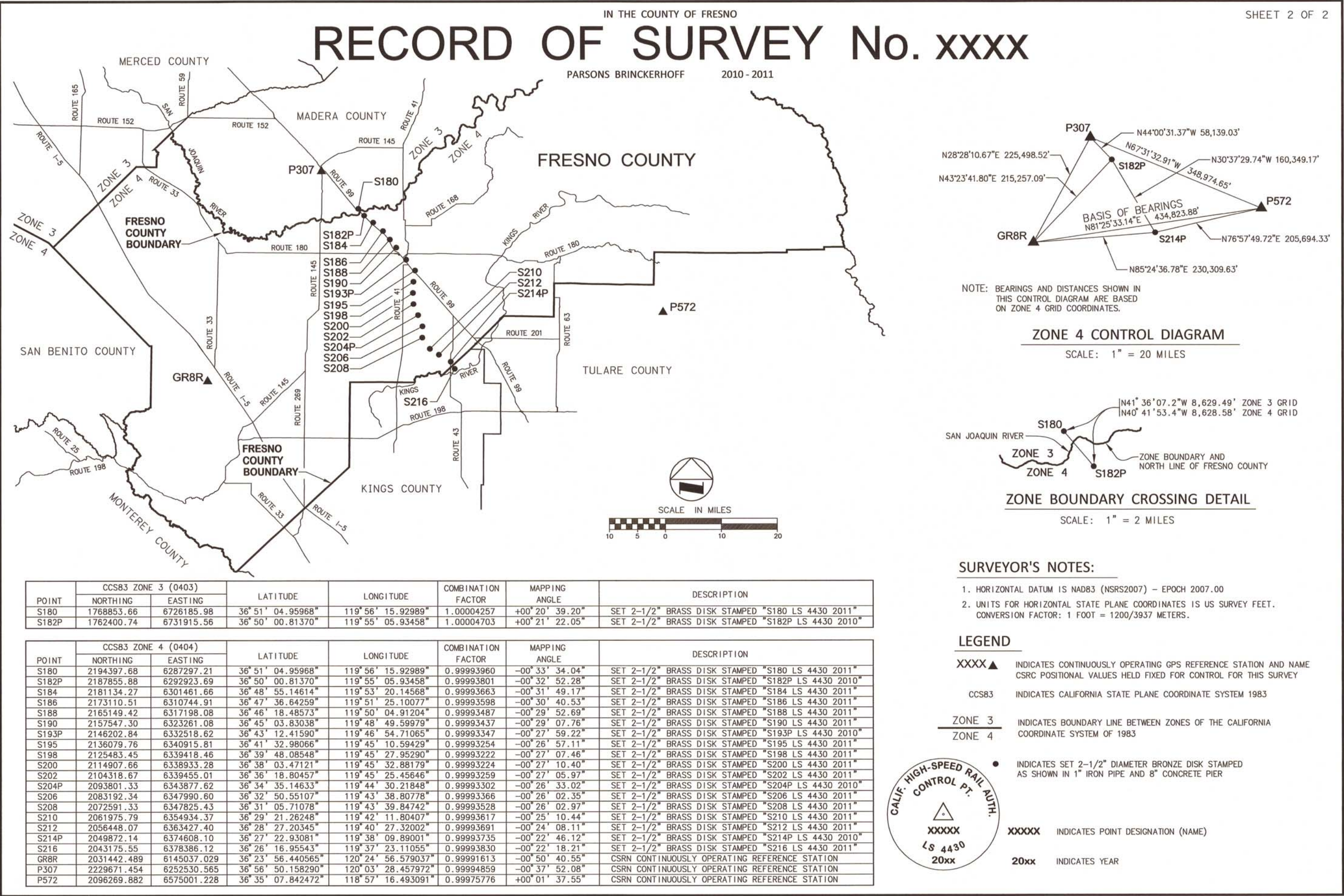
ALAN ISAAC WEAVER, P.L.S. 7009 EXPIRES 09/30/2013
COUNTY SURVEYOR

RECORDER'S STATEMENT

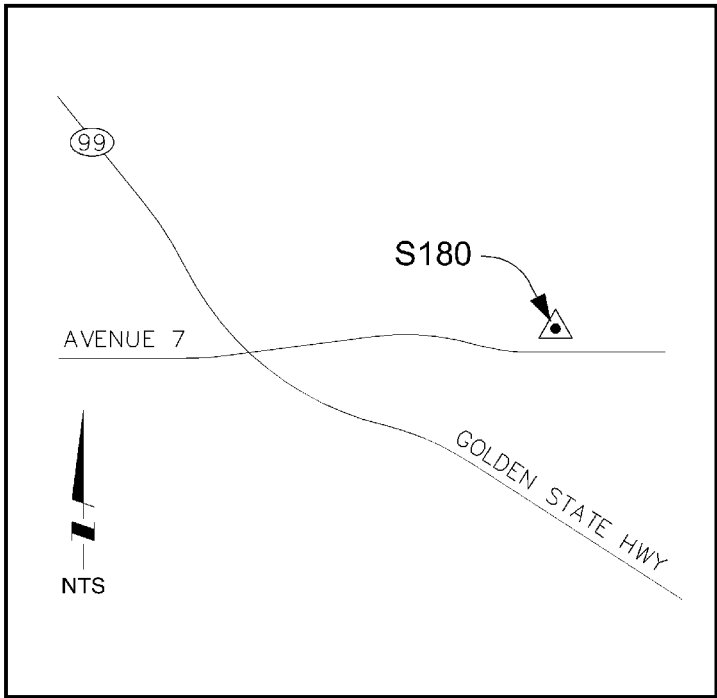
FILED THIS _____ DAY OF _____, 2012, AT _____M. IN
BOOK _____ OF _____ AT PAGE _____, AT THE REQUEST
OF PARSONS BRINCKERHOFF.

PAUL DICTOS, COUNTY RECORDER

HSR 13-06 - EXECUTION VERSION



SURVEY CONTROL MONUMENT DATA SHEET Sheet of



Designation: **S180**

Date: 11/17/2011

Monument Description:
2 1/2" Bronze Disk in 1" Iron
Pipe in 8" Concrete Pier



To Reach:

In the County of Madera, from the intersection of Highway 99 and Avenue 7, proceed east along Avenue 7, 0.5 mile to the Monument on the left.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	51'	04.95968"	N
Longitude	:	119°	56'	15.92989"	W

California Coordinate System (CCS83) US Survey Feet

Zone 3	Northing	:	1768853.66	Comb. Factor:	1.00004257
	Easting	:	6726185.98		
Zone 4	Northing	:	2194397.68	Comb. Factor:	0.99993960
	Easting	:	6287297.21		

VERTICAL

	US Survey Feet	Method
NAVD88:	Not established	Levels/GPS

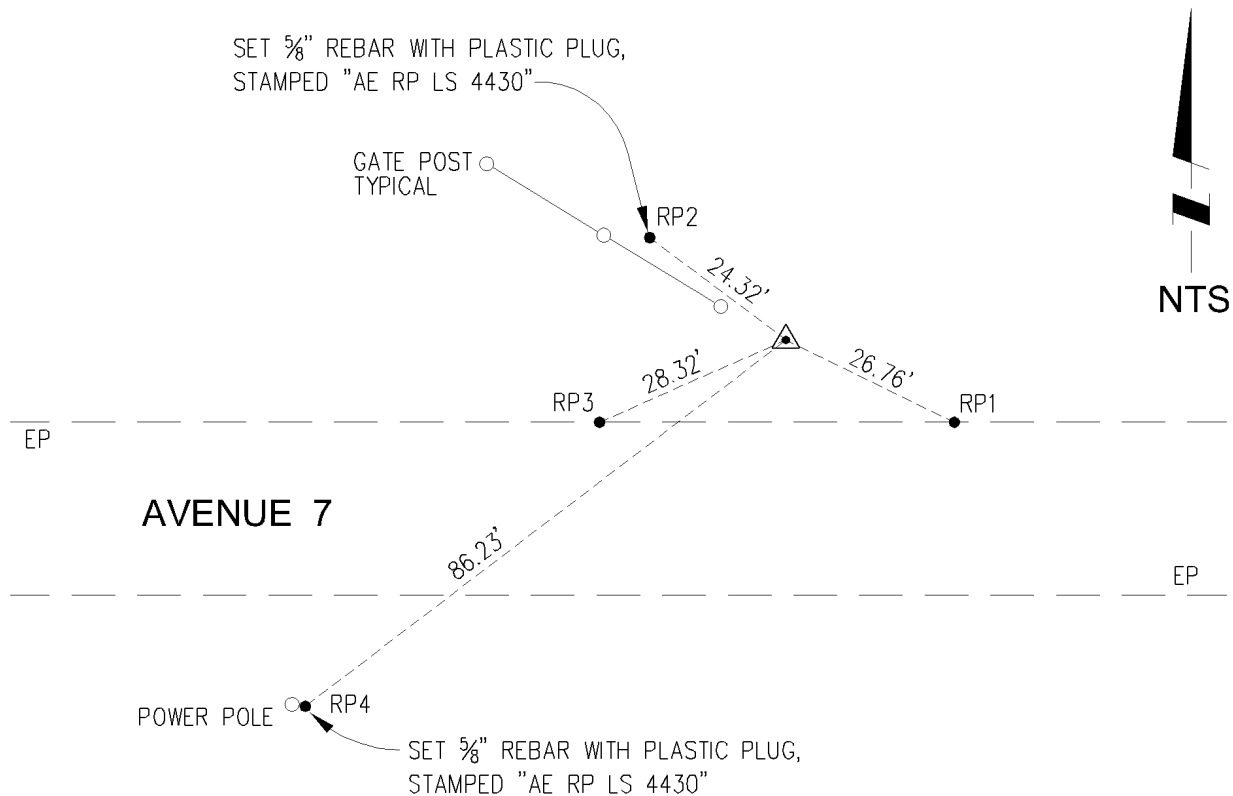
Vertical elevations were established from differential levels between primary control monuments.



SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF: J. TERRY	R. WILLIAMS	DATE OF SURVEY: 9/20/2011	DESIGNATION: S180
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**LEGEND:**

- △ CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S180 LS 4430 2011"
- REFERENCE POINT, SET "C" NAIL AND TAG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

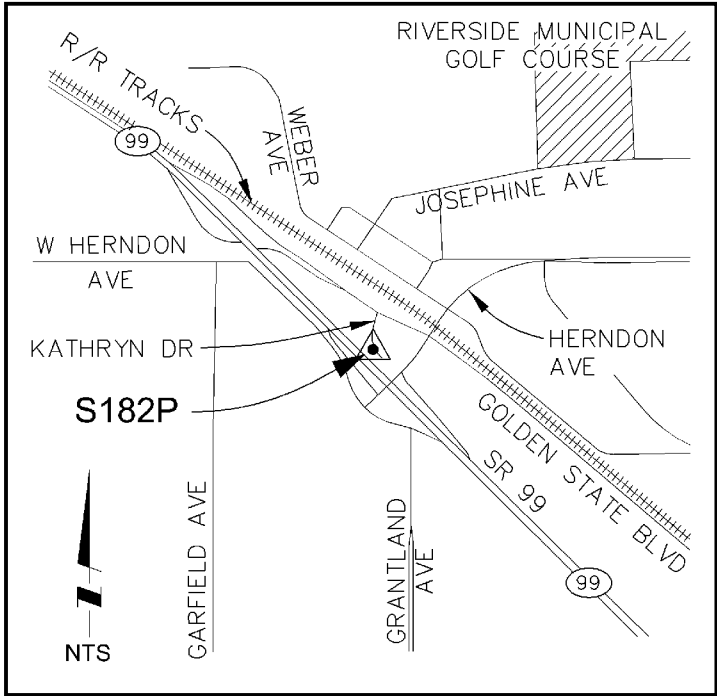
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S180			4.80			2-1/2" BRONZE DISK
	4.94					
RP4			5.15			5/8" REBAR LS 4430
	4.77					
RP3			4.51			NAIL & TAG LS 4430
	4.87					
RP2			5.12			5/8" REBAR LS 4430
	4.88					
RP1			4.58			NAIL & TAG LS 4430
	4.70					
S180						2-1/2" BRONZE DISK



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SURVEY CONTROL MONUMENT DATA SHEET Sheet of



Designation: **S182P**

Date: **10/19/2010**

Monument Description:
**2 1/2" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier**



To Reach:

In the County of Fresno, City of Fresno, from the intersection of Golden State Boulevard and Kathryn Drive, southeasterly 510 feet along Kathryn Drive to the monument, 1.0 feet behind the back of walk on the southwesterly side of Kathryn Drive.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates		Degrees	Minutes	Seconds	
Latitude	:	36°	50'	00.81370"	N
Longitude	:	119°	55'	05.93458"	W

California Coordinate System (CCS83) US Survey Feet

Zone 3	Northing	:	1762400.74	Comb. Factor:	1.00004703
	Easting	:	6731915.56		
Zone 4	Northing	:	2187855.88	Comb. Factor:	0.99993801
	Easting	:	6292923.69		

VERTICAL

	US Survey Feet	Method
NAVD88:	300.64	GPS

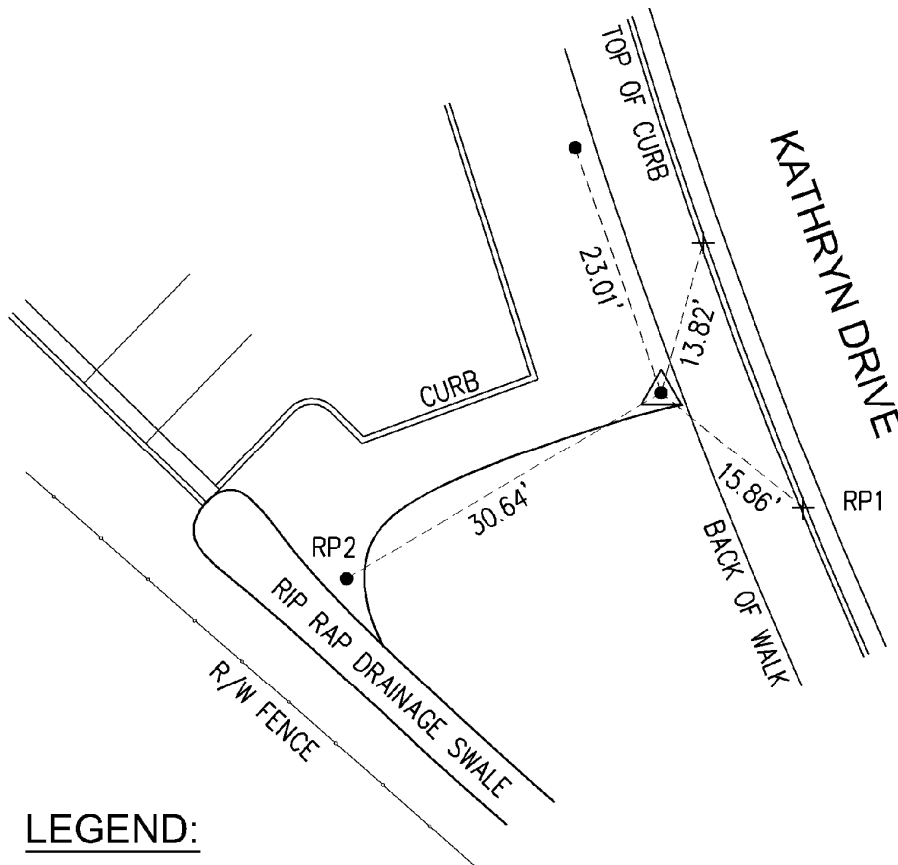
The orthometric height was determined by two, one-hour GPS observations, using GEOID09 and CGPS ellipsoid heights. Equipment used included fixed height 2.000 meter rods, Trimble 5700 receivers and matching Zephyr Geodetic antennas.



SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF: W. Hoff	J. TERRY	R. WILLIAMS	DATE OF SURVEY: 10/19/2010	DESIGNATION: S182P
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LEGEND:

- △ CONTROL POINT, 2 ½" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S182P LS 4430 2010"
- REFERENCE POINT, SET ⅝" REBAR WITH PLASTIC PLUG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.
- + REFERENCE POINT, SET CHISELED "X" IN TOP OF CURB.

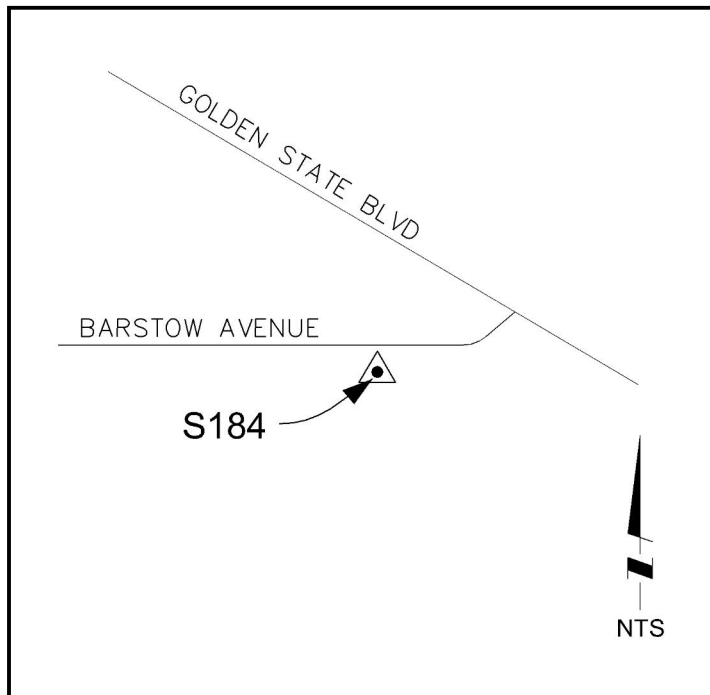
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S182P			4.96			2-1/2" BRONZE DISK
RP2	5.89		5.57			5/8" REBAR LS 4430
RP1	5.17		5.31			CHISELED "X"
S182P	4.78					2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S184**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the City of Fresno, County of Fresno, from the intersection of Golden State Boulevard and Barstow Avenue, proceed westerly along Barstow Avenue, 250 feet to the Monument on the left.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	48'	55.14614"	N
Longitude	:	119°	53'	20.14568"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2181134.27	
	Easting	:	6301461.66	Comb. Factor: 0.99993663

VERTICAL

	US Survey Feet	Method
NAVD88:	306.24	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.

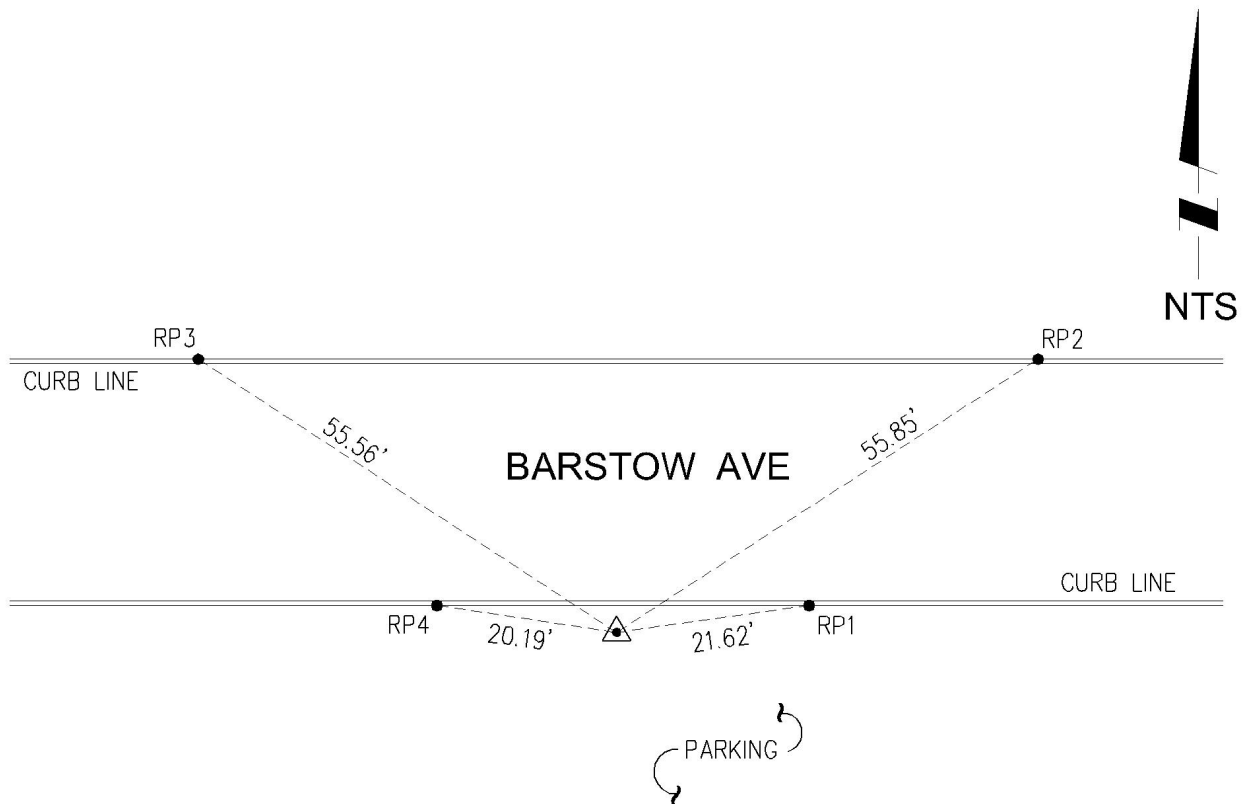



SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S184**LEGEND:**

-  CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S184 LS 4430 2011"
- REFERENCE POINT, SET "C" NAIL AND TAG, STAMPED "AE RP LS 4430" IN TOP OF CURB

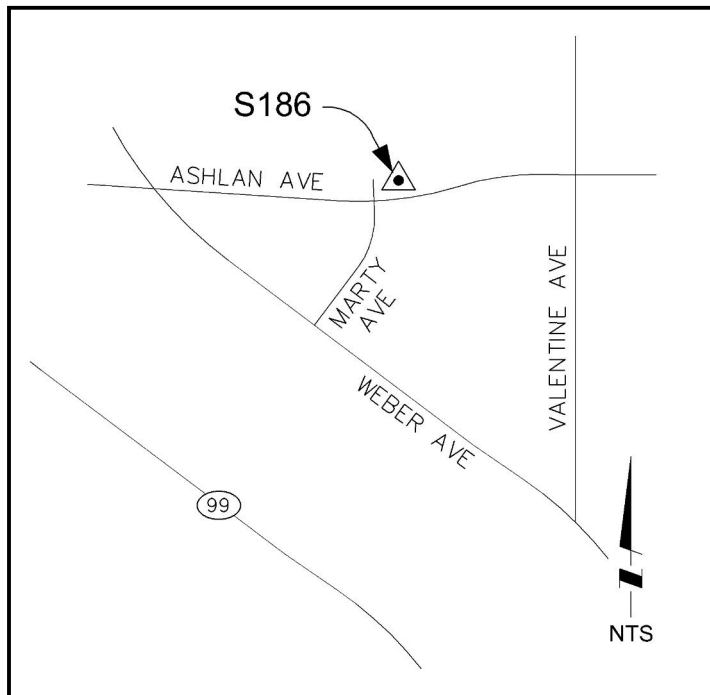
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S184			5.79			2-1/2" BRONZE DISK
	5.86					
RP4			5.65			NAIL & TAG LS 4430
	5.36					
RP3			5.52			NAIL & TAG LS 4430
	5.50					
RP2			5.24			NAIL & TAG LS 4430
	5.53					
RP1			5.71			NAIL & TAG LS 4430
	5.66					
S184						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

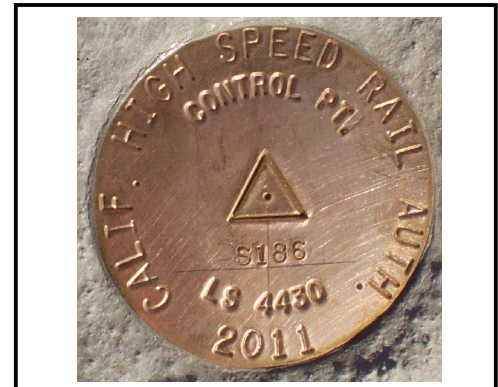
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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S186**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the City of Fresno, County of Fresno, Monument is at the northeast corner of Ashlan Avenue and Marty Avenue.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

	Degrees	Minutes	Seconds	
Latitude :	36°	47'	36.64259"	N
Longitude :	119°	51'	25.10077"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing :	2173110.51	
	Easting :	6310744.91	Comb. Factor: 0.99993598

VERTICAL

	US Survey Feet	Method
NAVD88:	294.70	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.



SURVEY CONTROL MONUMENT TIE SHEET

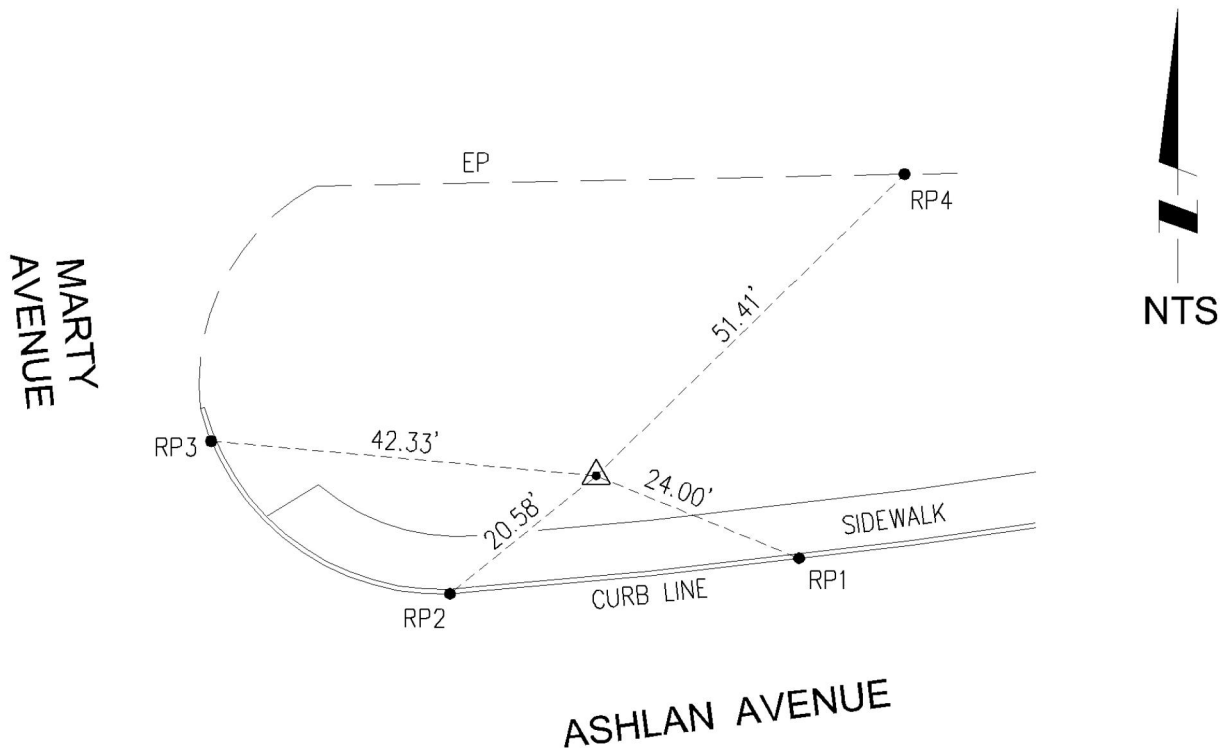
Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011

DESIGNATION:

S186**LEGEND:**

CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S186 LS 4430 2011"



REFERENCE POINT, SET "C" NAIL AND TAG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

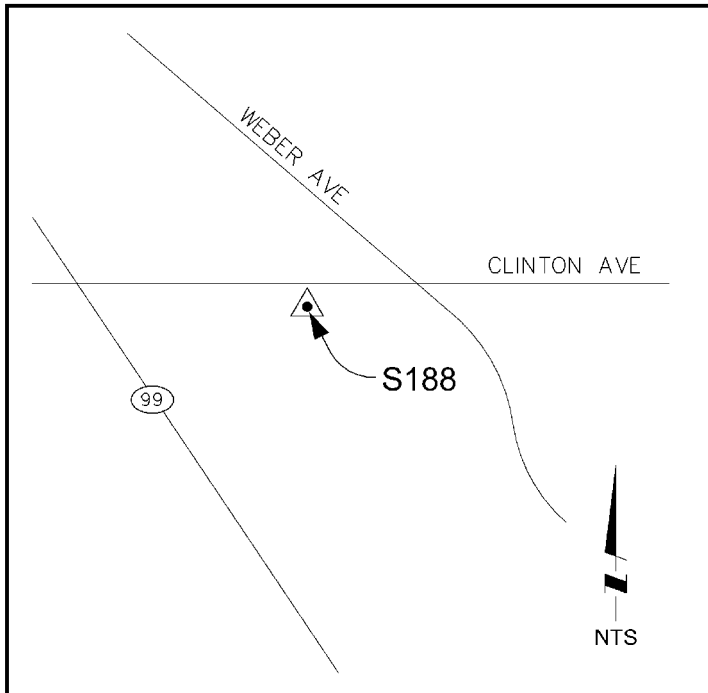
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S186			5.99			2-1/2" BRONZE DISK
	4.45					
RP4			4.22			NAIL & TAG LS 4430
	4.75					
RP3			4.68			NAIL & TAG LS 4430
	5.68					
RP2			5.36			NAIL & TAG LS 4430
	6.00					
RP1			6.22			NAIL & TAG LS 4430
	5.59					
S186						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

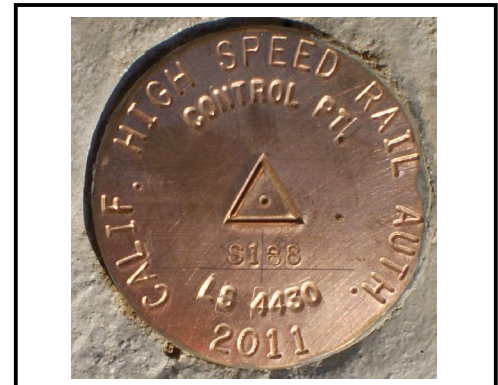
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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S188**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the City of Fresno, County of Fresno, from the intersection of Weber Avenue and Clinton Avenue, 150 feet west to the Monument on the left.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	46'	18.48573"	N
Longitude	:	119°	50'	04.91204"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2165149.42	
	Easting	:	6317198.08	Comb. Factor: 0.99993487

VERTICAL

	US Survey Feet	Method
NAVD88:	296.43	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.



SURVEY CONTROL MONUMENT TIE SHEET

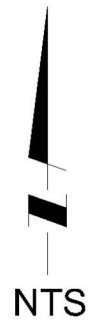
Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S188

CLINTON AVE

**LEGEND:**

- CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S188 LS 4430 2011"
- REFERENCE POINT, SET "C" NAIL AND TAG, STAMPED "AE RP LS 4430" IN AC BERM.

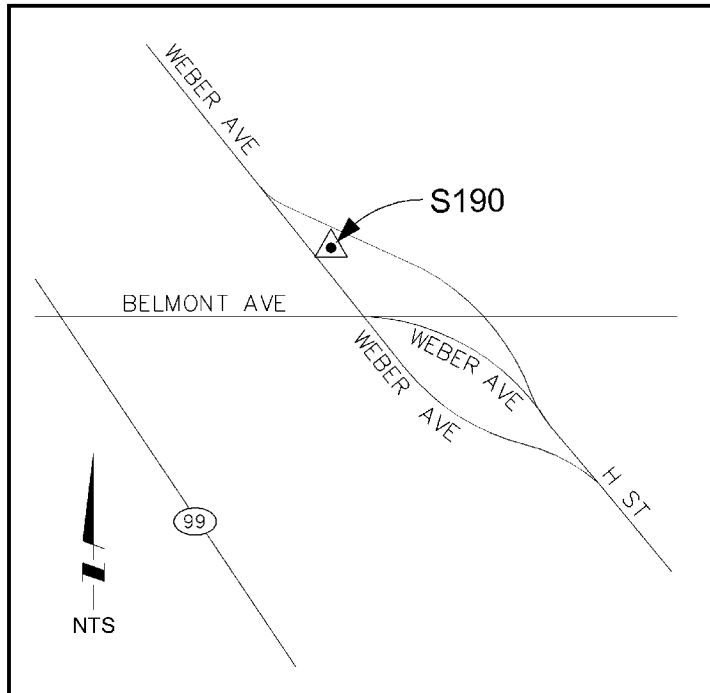
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S188			5.25			2-1/2" BRONZE DISK
	3.01					
RP4			3.30			NAIL & TAG LS 4430
	3.82					
RP3			3.46			NAIL & TAG LS 4430
	4.37					
RP2			4.60			NAIL & TAG LS 4430
	5.01					
RP1			4.69			NAIL & TAG LS 4430
	5.09					
S188						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S190**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the City of Fresno, County of Fresno, Monument is 300 feet north of the Belmont Avenue and Weber Avenue split.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	45'	03.83038"	N
Longitude	:	119°	48'	49.59979"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2157547.30	
	Easting	:	6323261.08	Comb. Factor: 0.99993437

VERTICAL

	US Survey Feet	Method
NAVD88:	288.96	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.

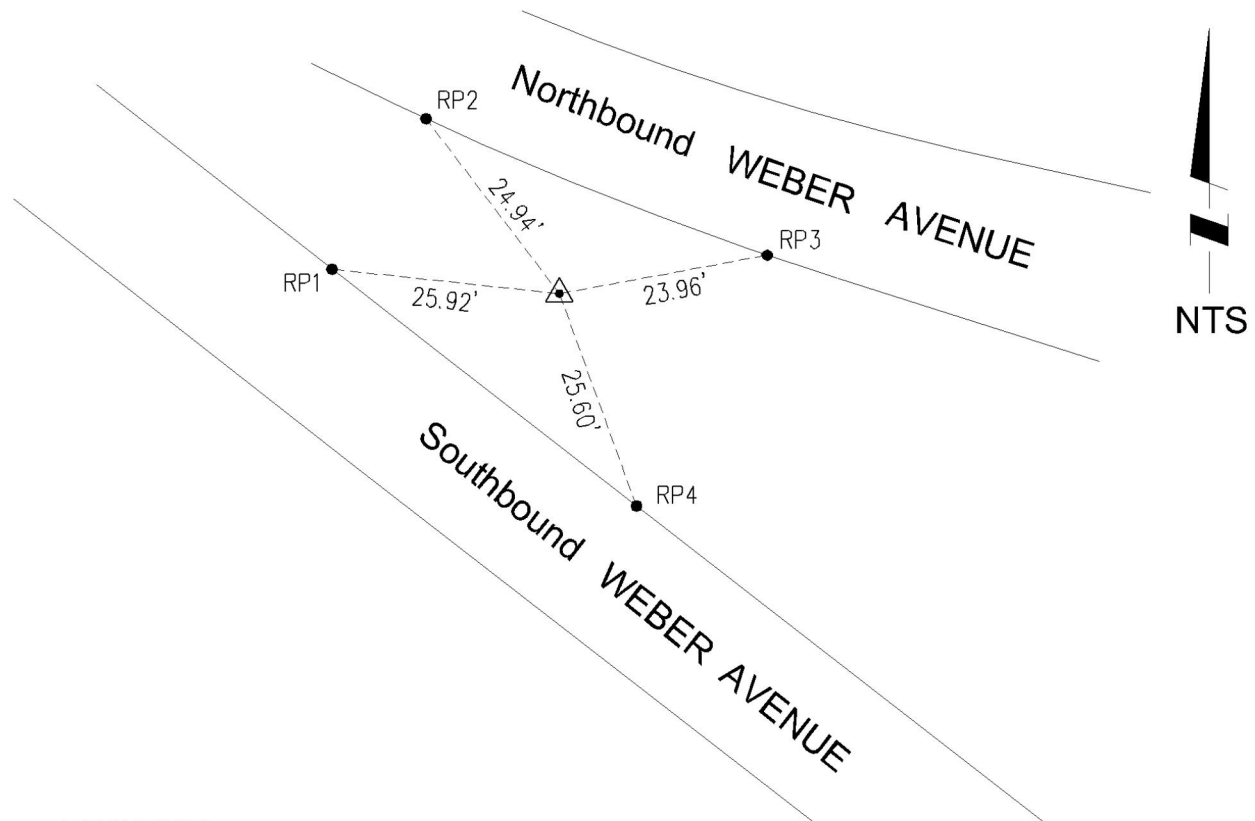


SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S190**LEGEND:**

- CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S190 LS 4430 2011"
- REFERENCE POINT, SET "C" NAIL AND TAG, STAMPED "AE RP LS 4430" IN TOP OF CURB

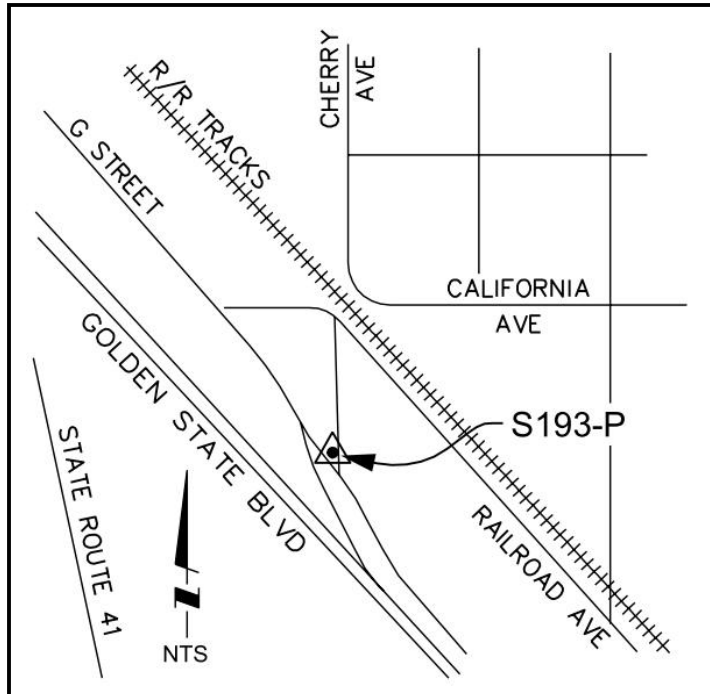
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S190			4.40			2-1/2" BRONZE DISK
	1.40					
RP4			1.70			NAIL & TAG LS 4430
	5.47					
RP3			5.29			NAIL & TAG LS 4430
	5.19					
RP2			5.43			NAIL & TAG LS 4430
	3.13					
RP1			2.93			NAIL & TAG LS 4430
	4.56					
S190						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S193P**

Date: 9/14/2010

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the City of Fresno, County of Fresno, 450 southerly along Cherry Avenue from the intersection of California Avenue, 7.8 feet westerly of the west curb face of Cherry Avenue, 11.8 feet northeasterly of the northeasterly curb face of G Street.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

	Degrees	Minutes	Seconds	
Latitude :	36°	43'	12.41590"	N
Longitude :	119°	46'	54.71065"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing :	2146202.84	Comb. Factor: 0.99993347
	Easting :	6332518.62	

VERTICAL

	US Survey Feet	Method
NAVD88:	286.04	GPS

The orthometric height was determined by two, one-hour GPS observations, using GEOID09 and CGPS ellipsoid heights. Equipment used included fixed height 2.000 meter rods, Trimble 5700 receivers and matching Zephyr Geodetic antennas.

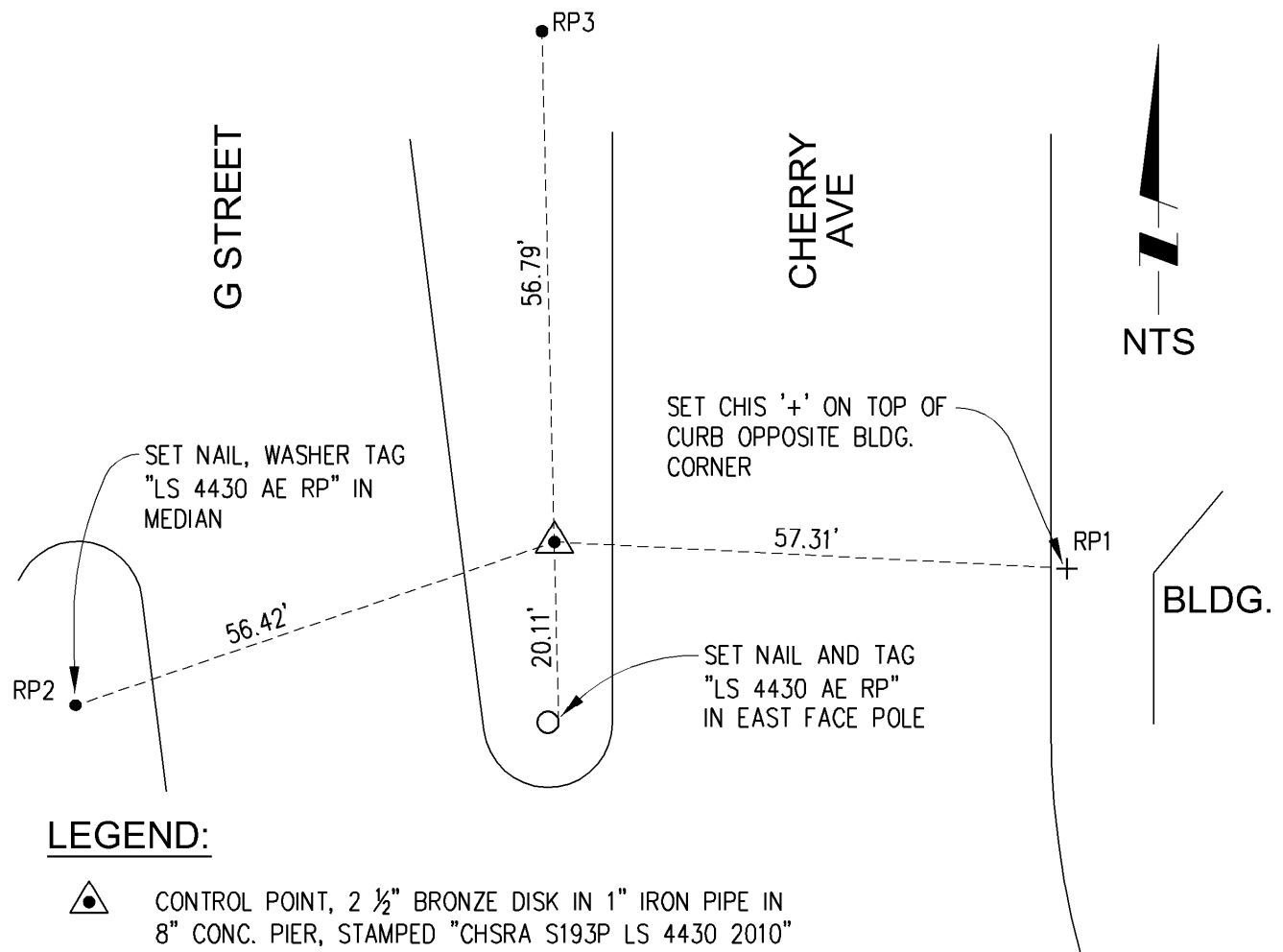


HSR 13-06 - EXECUTION VERSION

SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF: W. Hoff	M. Zwissler	DATE OF SURVEY: 9/10/2010	DESIGNATION: S193P
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**LEGEND:**

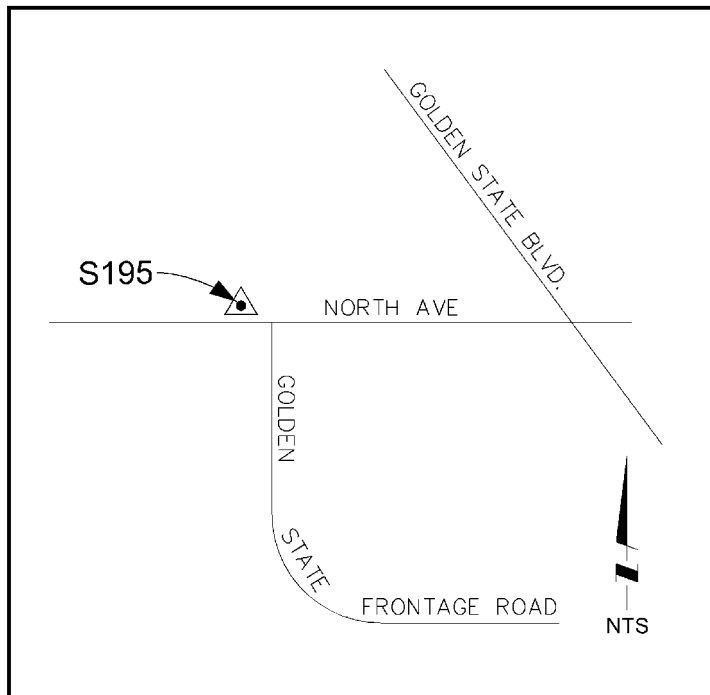
- CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S193P LS 4430 2010"
- REFERENCE POINT, SET 5/8" REBAR WITH PLASTIC PLUG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S193-P			4.12			2-1/2" BRONZE DISK
	3.90					
RP3			4.29			5/8" REBAR LS 4430
	4.45					
RP2			4.75			NAIL & TAG LS 4430
	5.52					
RP1			5.31			CHIS. "X" IN TC
	4.60					
S193-P						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S195**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the City of Fresno, County of Fresno, Monument is at the northwest quadrant of the intersection of North Avenue and Golden State Frontage Road.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	41'	32.98066"	N
Longitude	:	119°	45'	10.59429"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2136079.76	
	Easting	:	6340915.81	Comb. Factor: 0.99993254

VERTICAL

	US Survey Feet	Method
NAVD88:	291.36	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.

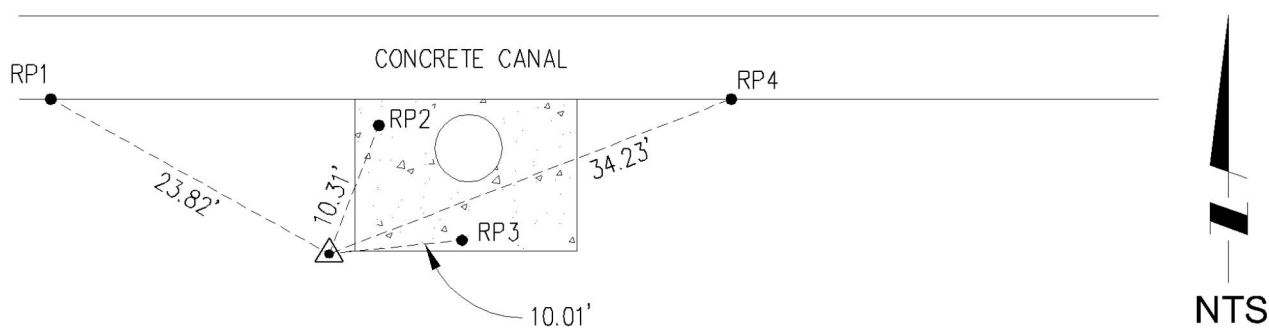


SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S195**LEGEND:**

- ▲ CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S195 LS 4430 2011"
- REFERENCE POINT, SET "C" NAIL AND TAG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S195			5.69			2-1/2" BRONZE DISK
	5.32					
RP4			5.11			NAIL & TAG LS 4430
	5.54					
RP3			5.67			NAIL & TAG LS 4430
	5.31					
RP2			5.10			NAIL & TAG LS 4430
	5.05					
RP1			5.24			NAIL & TAG LS 4430
	5.59					
S195						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S198**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the County of Fresno, from the intersection of Cedar Avenue and American Avenue, proceed west along American Avenue, 0.2 mile to the Monument on the left.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	39'	48.08548"	N
Longitude	:	119°	45'	27.95290"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2125483.45	
	Easting	:	6339418.46	Comb. Factor: 0.99993222

VERTICAL

	US Survey Feet	Method
NAVD88:	288.65	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.



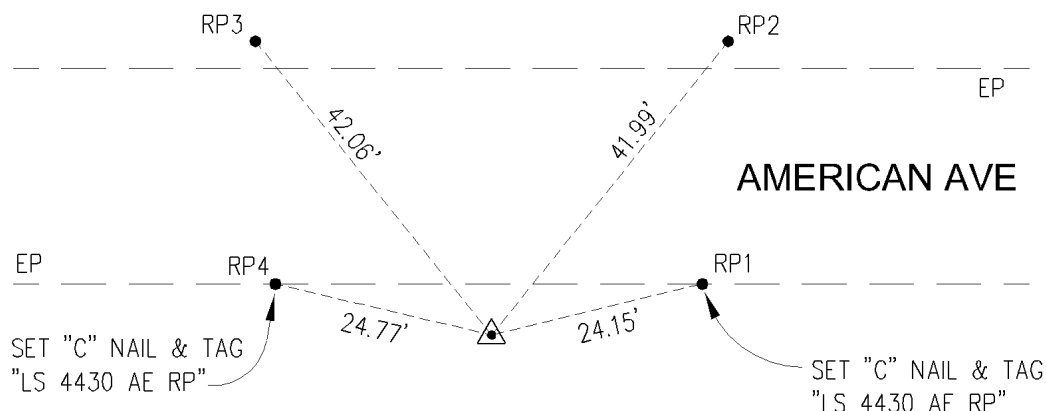
HSR 13-06 - EXECUTION VERSION

SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S198**LEGEND:**

- CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S198 LS 4430 2011"
- REFERENCE POINT, SET 5/8" REBAR WITH PLASTIC PLUG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

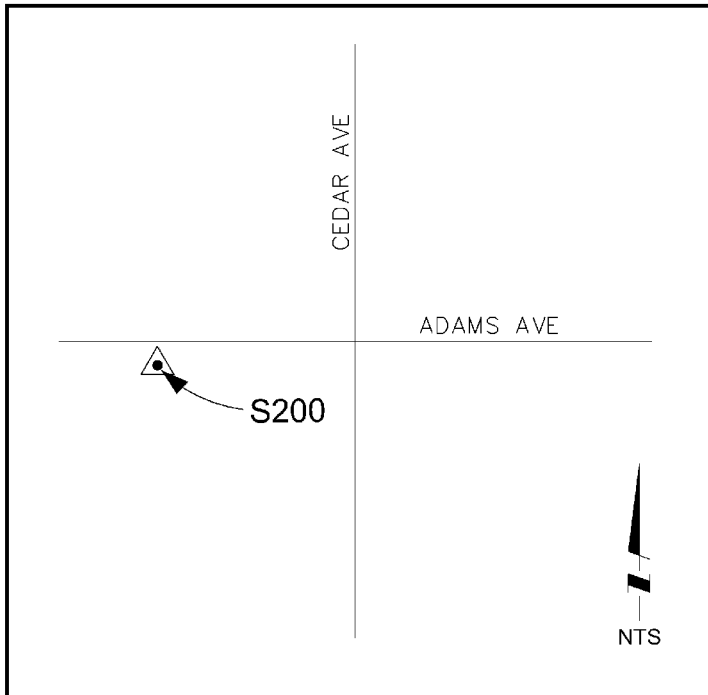
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S198			5.29			2-1/2" BRONZE DISK
	5.42					
RP1			5.14			NAIL & TAG LS 4430
	5.51					
RP2			5.74			5/8" REBAR LS 4430
	5.81					
RP3			5.46			5/8" REBAR LS 4430
	5.08					
RP4			5.31			NAIL & TAG LS 4430
	5.12					
S198						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S200**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the County of Fresno, from the intersection of Cedar Avenue and E. Adams Avenue, proceed west along E. Adams Avenue, 0.2 mile to the Monument on the left.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	38'	03.47121"	N
Longitude	:	119°	45'	32.88179"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2114907.66	
	Easting	:	6338933.28	Comb. Factor: 0.99993224

VERTICAL

	US Survey Feet	Method
NAVD88:	284.41	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.

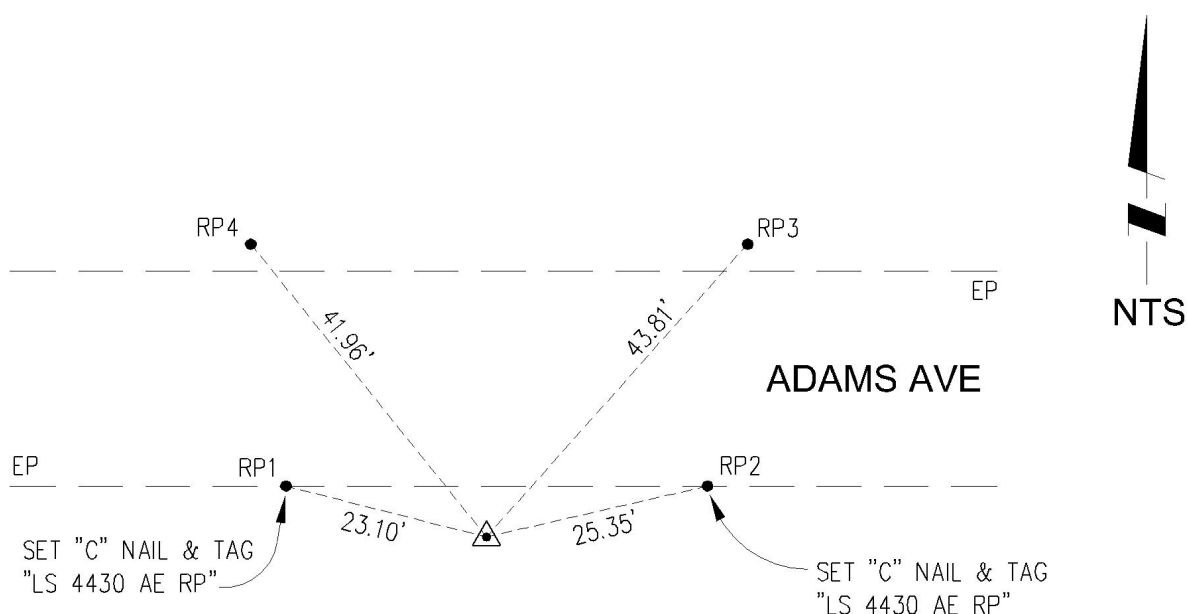


SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S200**LEGEND:**

- CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S200 LS 4430 2011"
- REFERENCE POINT, SET 5/8" REBAR WITH PLASTIC PLUG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

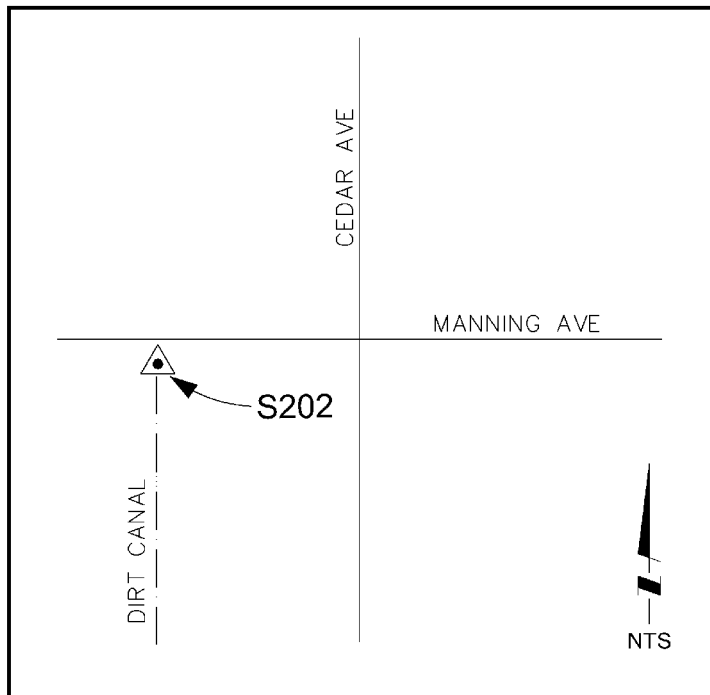
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S200			5.31			2-1/2" BRONZE DISK
	5.09					
RP4			5.32			5/8" REBAR LS 4430
	5.34					
RP3			5.08			5/8" REBAR LS 4430
	5.00					
RP2			5.27			NAIL & TAG LS 4430
	5.22					
RP1			5.03			NAIL & TAG LS 4430
	5.36					
S200						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S202**

Date: 11/17/2011

Monument Description:
 2 ½" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the County of Fresno, from the intersection of Cedar Avenue and Manning Avenue, proceed west along Manning Avenue, 0.1 mile to the Monument on the left.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

		Degrees	Minutes	Seconds	
Latitude	:	36°	36'	18.80457"	N
Longitude	:	119°	45'	25.45646"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing	:	2104318.67	
	Easting	:	6339455.01	Comb. Factor: 0.99993259

VERTICAL

	US Survey Feet	Method
NAVD88:	278.34	Levels/GPS

Vertical elevations were established from differential levels between primary control monuments.



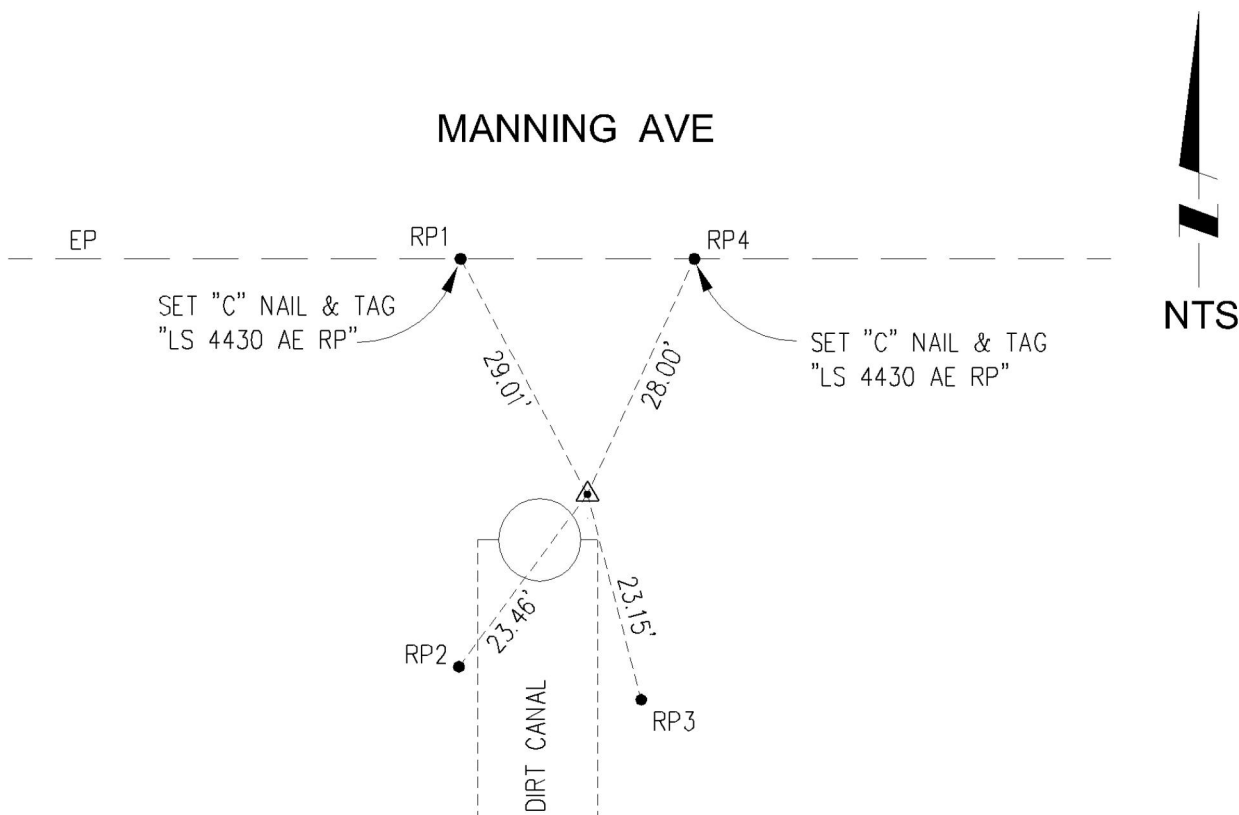
HSR 13-06 - EXECUTION VERSION

SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
J. TERRY

R. WILLIAMS

DATE OF SURVEY:
9/20/2011DESIGNATION:
S202**LEGEND:**

- CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S202 LS 4430 2011"
- REFERENCE POINT, SET 5/8" REBAR WITH PLASTIC PLUG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

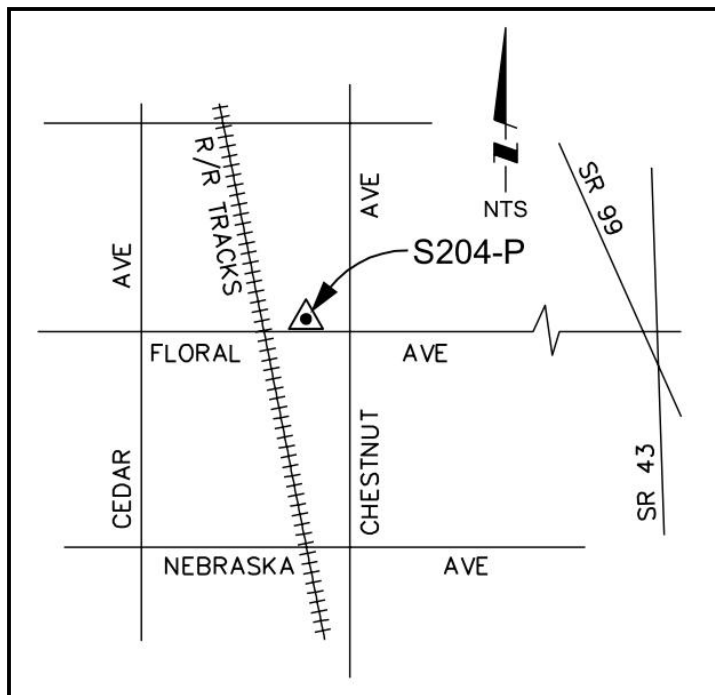
Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S202			5.07			2-1/2" BRONZE DISK
	5.19					
RP4			5.35			NAIL & TAG LS 4430
	5.01					
RP3			4.74			5/8" REBAR LS 4430
	5.41					
RP2			5.64			5/8" REBAR LS 4430
	5.37					
RP1			5.16			NAIL & TAG LS 4430
	4.98					
S202						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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SURVEY CONTROL MONUMENT DATA SHEET Sheet of

Designation: **S204P**

Date: 9/14/2010

Monument Description:
 2 1/2" Bronze Disk in 1" Iron
 Pipe in 8" Concrete Pier

**To Reach:**

In the County of Fresno, north side of Floral Avenue, 0.28 mile west of Chestnut Avenue, 700 feet east of the centerline of railroad tracks.

HORIZONTAL

DATUM: NAD 83 (NSRS2007)

EPOCH: 2007.00

Geodetic Coordinates

	Degrees	Minutes	Seconds	
Latitude :	36°	34'	35.14633"	N
Longitude :	119°	44'	30.21848"	W

California Coordinate System (CCS83) US Survey Feet

Zone 4	Northing :	2093801.33	
	Easting :	6343877.62	Comb. Factor: 0.99993302

VERTICAL

	US Survey Feet	Method
NAVD88:	275.93	GPS

The orthometric height was determined by two, one-hour GPS observations, using GEOID09 and CGPS ellipsoid heights. Equipment used included fixed height 2.000 meter rods, Trimble 5700 receivers and matching Zephyr Geodetic antennas.



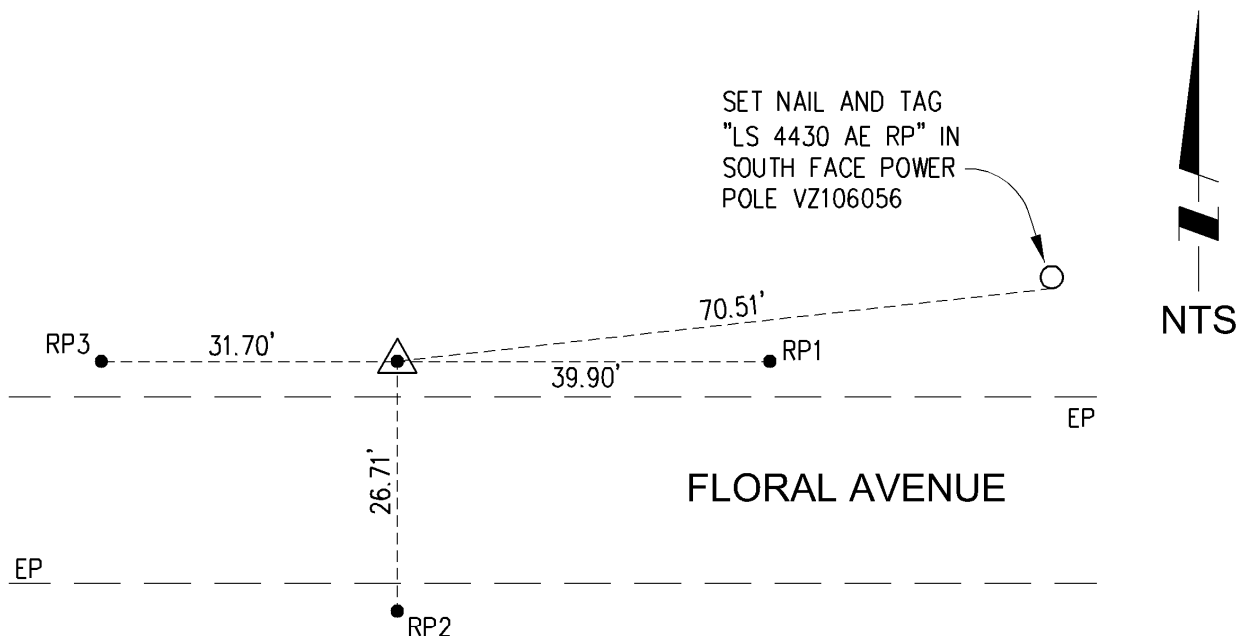
HSR 13-06 - EXECUTION VERSION



SURVEY CONTROL MONUMENT TIE SHEET

Sheet of

PARTY CHIEF:
W. Hoff

M. Zwissler

DATE OF SURVEY:
9/09/2010DESIGNATION:
S204P**LEGEND:**

-  CONTROL POINT, 2 1/2" BRONZE DISK IN 1" IRON PIPE IN 8" CONC. PIER, STAMPED "CHSRA S204P LS 4430 2010"
-  REFERENCE POINT, SET 5/8" REBAR WITH PLASTIC PLUG, STAMPED "AE RP LS 4430" UNLESS OTHERWISE NOTED.

Station	Back (+)	H.I.	Fore (-)	Elevation	Adj. Elev.	Description
S204-P			4.44			2-1/2" BRONZE DISK
	4.57					
RP3			5.12			5/8" REBAR LS 4430
	5.51					
RP2			5.65			5/8" REBAR LS 4430
	5.22					
RP1			4.84			5/8" REBAR LS 4430
	4.75					
S204-P						2-1/2" BRONZE DISK



HSR 13-06 - EXECUTION VERSION

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